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**527 CMR: BOARD OF FIRE PREVENTION REGULATIONS**

**527 CMR 35.00: CROP RIPENING OR COLOR PROCESSES**

**Section**

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35.01: Scope

527 CMR 35.00 shall apply to the equipment and operations for the process of ripening bananas, tomatoes, pears or honeydew melons, and coloring tobacco, citrus fruits or other crops in tightly closed rooms, and shall include those processes where ethylene gas is introduced into the room to assist these processes.

35.02: Definitions

For the purpose of 527 CMR 35.00 the following terms shall have the meanings respectively assigned to them:

Approved: Approved by the State Fire Marshal.

Combustible Liquid: Any liquid having a flash point at or above 100°F shall be known as Class II or III liquids. Combustible liquids shall be divided into the following classifications:

Class IA. Liquids having flash points below 73°F. and having a boiling point below 100°F.

Class IB. Liquids having flash points below 73°F. and having a boiling point at or above 100°F.

Class IC. Liquids having flash points at or above 73°F. and below 100°F.

Class II. Liquids having flash points at or above 100°F and below 140°F.

Class IIIA. Liquids having flash points at or above 140°F and below 200°F.

Class IIIB. Liquids having flash points at or above 200°F.

Compressed Gas: Any material or mixture having in the container as absolute pressure exceeding 40 psi at 70°F or, regardless of the pressure at 70°F, having an absolute pressure exceeding 140 psi at 130°F; or any flammable liquid material having a vapor pressure exceeding 40 psi absolute at 100°F as determined by ASTM D323.

Flammable Compressed Gas: Either a mixture of 13% or less (by volume) with air forms a flammable mixture, or the flammable range with air is wider than 12% regardless of the lower limitation. These limitations shall be determined at atmospheric temperature and pressure.

Flammable liquid: Any liquid having a flash point below 100°F. and having a vapor pressure not exceeding 40 psi at 100°F. Flammable liquids shall be known as Class I liquids and shall be divided into the following classifications:

35.03: Permits Required

(1) A permit shall be obtained from the head of the fire department for any crop ripening or color process.

(2) Where that process involves the storage, handling, and use of a flammable compressed gas or a combustible or flammable liquid, a permit shall also be obtained from the head of the fire department under the provisions of 527 CMR 14.00.

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**35.04: Fire Safety Requirements**

- (1) General: The layout, arrangement and construction of buildings and structures in which the process of ripening or coloring of crops is conducted shall comply with the applicable requirements of 780 CMR (the State Building Code) listed in Appendix A for the appropriate use group classification, and shall be provided with fire protection and fire extinguishing equipment as required by 780 CMR. Buildings and structures and their service equipment shall be maintained in safe and sound condition as required by 527 CMR.
- (2) Ethylene: The location of buildings in which crop ripening or coloring processes utilizing gas containers of ethylene are conducted shall be approved by the head of the fire department.
- (a) Distribution: The method for introducing ethylene shall provide positive control. The ethylene shall be measured so that the quantity introduced does not exceed one part ethylene to 1,000 parts of air.
- (b) Containers: Ethylene gas containers other than those connected for use shall be stored outside of the building or in a special building except that not more than two portable Department of Transportation (DOT) containers not connected for use shall be stored inside of the building premises. Such inside rooms or portions of buildings used for storage of these containers shall be constructed so that walls or partitions, floors and ceiling have fire resistance ratings as required by the applicable provisions of 780 CMR (the State Building Code) listed in Appendix A.
- (c) Piping: Ethylene piping shall be of steel pipe. Flexible connectors and hose, when used shall be listed. Tubing shall be of brass or copper with not less than 0.049 inch (1.24mm) wall thickness.
- (3) Electrical Equipment: Electrical wiring and equipment shall be installed as specified in 527 CMR 12.00
- (4) Heating: Heating of ripening and coloring rooms shall be by indirect means with low pressure steam, hot water or warm air; approved electric heaters; or listed gas heaters or listed kerosene heaters both of which shall have sealed combustion chambers.
- (a) Steam and hot water pipes and radiators shall have a clearance of at least one inch (25mm) to combustible material.
- (b) Gas heaters and their vents shall be installed in accordance with 248 CMR (Massachusetts State Plumbing and Gas Code) listed in Appendix A. Gas heaters shall be equipped with an automatic pilot device to shut off the gas supply whenever the flame is extinguished.
- (c) Burners for gas or kerosene heaters shall be installed so that air for combustion is taken from outside the ripening or coloring room and the products of combustion are discharged outside the building.
- (d) Kerosene heaters shall be installed in accordance with the applicable provisions of 527 CMR 4.00 and the BOCA Mechanical Code listed in Appendix A.
- (e) Electric heaters shall be of a type not having an exposed surface at a temperature higher than 800°F, (427°C.) and with thermostatic elements which do not produce sparks. They shall be of a type approved for use in Class I, Division I Hazardous location.
- (f) A protective guard shall be provided around any heater to prevent the possibility of its being knocked over by other equipment such as vehicles or lift trucks.
- (5) Open flames: Open flame heater and unenclosed lights shall not be permitted in ripening or coloring room using ethylene from gas tanks or cylinders. NO SMOKING signs shall be posted at every entrance and smoking shall be prohibited in the ripening or coloring rooms.
- (6) Housekeeping: Rooms for ripening or coloring shall be frequently cleared of all combustible material.

**REGULATORY AUTHORITY**

527 CMR 35.00: M.G.L. c. 148, § 10.